if not all applicants will incorporate frequency agility into their satellites and Earth stations.[103] The IUSG asks the Commission to note that a frequency agility requirement is particularly important to the implementation of the INEA, which can only guarantee all 2 GHz MSS entrants the right to negotiate meaningfully for the 2 GHz MSS bands of their choice if all entrants can relocate their operations as necessary.

G. Commenters Disagree With the Commission's Proposed Artificial Incentives to Provide MSS to Underserved Communities.

There is broad agreement among the Applicants that the Commission should not attempt to establish incentives for satellite operators to afford service to currently underserved communities that 2 GHz MSS service providers will be obliged to serve anyway.

The IUSG supports Iridium's observation that, while MSS systems will by their nature serve the entire United States, MSS system operators will not provide end users with retail MSS service; rather, it is retail service providers that will do so.[104] As retail service providers will be regulated as common carriers, they will be required to provide MSS on a nondiscriminatory basis. As Constellation observes, regulatory incentives of the kind discussed by the Commission will only distort market conditions in what promises to be a vigorously competitive service.[105]

The IUSG agrees with MCHI that the Commission can best promote service to underserved communities by reducing relocation costs for 2 GHz MSS systems and thereby

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103 See TMI Comments at 4; Inmarsat Comments at 6.

104 See Iridium Comments at 50 & n.78; IUSG Comments at 44-45.

105 See Constellation Comments at 27-28.

reducing the cost of service to end users.[106] The Commission should also consider the views of MCHI, Globalstar and the SIA that it should remove regulations that prevent satellite operators from seeking universal service support subsidies.[107]

As the IUSG previously observed, the establishment of the artificial incentives that the Commission has proposed will only ignite meaningless disputes among the system proponents as to which global satellite system -- each of which is designed to serve the entire country in any event -- is more deserving of a regulatory advantage over its competitors. Celsat's blatantly self-serving attempts to claim priority over reserve spectrum under the proposed Flexible Band Arrangement on grounds of its alleged service to underserved communities are but a taste of the arguments that the Commission will be forced to consider if it establishes the incentives described in the NPRM.[108]

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106 See MCHI Comments at 26-27. A given reduction in relocation costs will have a greater impact on rates for MSS customers than it would on rates for terrestrial cellular customers, because call volume for MSS will be significantly lower.

107 See id. at 26-27; Globalstar Comments at 44-45; SIA Comments at 3.

108 See Celsat Comments at 2, 9-10, 28-29. Celsat argues that it will serve currently underserved communities better than other 2 GHz MSS systems because it will have higher call volumes and offer lower rates. See id. at 3. If such is the case -- and that remains to be seen -- Celsat will surely be flooded by customer requests from well-served as well as underserved communities, and will have no need of artificial regulatory incentives to serve a loyal customer base. Indeed, Celsat appears to have a well-formed marketing plan already, and seems to be in no need of additional encouragement -- whether in the form of additional spectrum or lax milestones -- to serve one part of the country or another.

H. Virtually All Applicants Oppose a Requirement That E911 Technology be Incorporated Into 2 GHz MSS Systems.

There is almost unanimous agreement among the Applicants that the Commission should not require 2 GHz MSS systems to incorporate enhanced 9-1-1 ("E911") technology. The IUSG fully agrees with Iridium that a requirement to incorporate such technology in 2 GHz MSS systems would be premature, given that the MSS industry remains in its infancy and that no standards have been developed for E911 service in any international forum.[109] The IUSG also notes the unfair competitive effect that such a requirement would work on 2 GHz MSS system operators, which will compete with Big LEO systems -- such as that of Iridium -- that are subject to no E911 requirement. The Commission should therefore refrain from applying an E911 requirement to 2 GHz MSS systems.[110]

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[109] See Iridium Comments at 47. See also Globalstar Comments at 43; Constellation Comments at 26-27; TMI Comments at 10.

[110] Celsat's proposal that the Commission require all 2 GHz MSS applicants to provide E911 services is impractical. See Celsat Comments at 29-30. See also BellSouth Comments at 8. The incorporation of E911 technology in 2 GHz MSS systems will require the complex and costly re-design of those systems. It is true that most 2 GHz MSS handsets will have a dual mode capability, allowing the user to switch back and forth seamlessly between satellite and terrestrial services (where E911 service is available). Unfortunately, however, E911 services will not be feasible where terrestrial services are unavailable. As the SIA explains, the imposition of an E911 requirement on 2 GHz MSS systems would require the inclusion of GPS hardware into satellite system handsets -- a burden not required of cellular and PCS operators -- that would add significantly to the cost and size of handsets and reduce operating time. See SIA Comments at 2. Such an effort would be particularly onerous and problematic for systems that are on the verge of launching their first satellites, as is ICO.

(continued...)

I. The Commission Cannot Apply an Anti-Trafficking Rule Regarding 2 GHz MSS Licenses to Those Parties to this Proceeding That it Does Not License.

In its comments, Iridium urges the Commission to apply anti-trafficking rules to U.S. and non-U.S. licensed satellite operators, but expresses uncertainty as to whether such rules would be binding on the latter.[111] Iridium's doubts are valid; the Commission clearly has no authority to regulate the sale of a license issued to a satellite system operator by a foreign administration, if such sale were desired.

The IUSG also opposes Iridium's suggestion that the Commission establish a special rule that would prevent ICO from transferring spectrum to any party it chooses.[112] As the Commission has acknowledged, the United States is required under Article XVII of the World Trade Organization ("WTO") Basic Telecom Agreement to treat like services and service suppliers from other WTO Member countries no less favorably than it treats its own services and

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[110](...continued)

The Commission should therefore forego any requirement that 2 GHz MSS system operators provide E911 services at this time. The Commission should also deny the requests of the U.S. Coast Guard, the National Telecommunications and Information Administration ("NTIA") and the Association of Public-Safety Communications Officials - International, Inc. ("APCO") that 2 GHz MSS systems incorporate E911 technology. See U.S. Coast Guard Comments at 4-5; NTIA Comments at 15-17; APCO Comments at 2. While the arguments of those parties are undoubtedly well-intentioned, they take no account at all of the significant problems that the inclusion of E911 technology in 2 GHz MSS handsets would entail.

[111] See Iridium Comments at 52. See also TMI Comments at 11 ("It may be questionable whether the FCC has jurisdiction over the sale of non-U.S. licensed systems . . .").

[112] See Iridium Comments at 52.

service suppliers.[113] In order to avoid placing ICO at an impermissible competitive disadvantage, the Commission would be required to impose any rule such as that proposed by Iridium on all 2 GHz MSS operators, not just on ICO.

V. Conclusion

For the foregoing reasons, the Commission should implement the INEA as described in these Reply Comments, establish the other measures recommended herein, and issue rules for the provision of MSS in the 2 GHz bands as speedily as possible.

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113 See Amendment of the Commission's Regulatory Policies to Allow Non-U.S. Licensed Space Stations to Provide Domestic and International Satellite Service in the United States, 12 FCC Rcd 24094, 24103 (¶ 22) (1997).

Respectfully submitted,

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July 26, 1999

ATTACHMENT A

ATTACHMENT A
IUSG REPLY COMMENTS - IB DOCKET No. 99-81

DRAFT PROPOSED RULES

§ 25.aaa Eligibility

Rules 25.xxx, 25.yyy, and 25.zzz, are applicable only to 2 GHz MSS licensees that received conditional licenses as a result of the first 2 GHz MSS processing round which concluded following the adoption of the Report & Order in IB Docket No. 99-81.

§ 25.xxx Coordination Default

(a) If, within 120 days of commencement of MSS intersystem coordination between an operating 2 GHz MSS licensee and a newly entering 2 GHz MSS licensee pursuant to Rule §_____, no coordination agreement has been reached after good faith negotiations, the newly entering MSS licensee shall be entitled, on an interim basis subject to subparagraph (b) below and dispute resolution as provided in Rule 25.yyy, to utilize up to $1/(n+1)$ of the spectrum then currently available for use by all operating 2 GHz MSS licensee(s) where n is the number of 2 GHz MSS systems both in operation and/or entering the frequency band; provided, that (i) a demand for the same or greater amount of spectrum had been made in conjunction with its request for coordination, (ii) payment of relocation reimbursement has been made to the operating 2 GHz MSS licensee(s) in accordance with Rule §_____ prior to any use of spectrum made available pursuant to this section, and (iii) utilization of such spectrum on an interim basis will not cause harmful interference to the operating 2 GHz MSS system(s) in the remaining frequency spectrum.

(b) No interim spectrum relief accorded to a newly entering 2 GHz MSS licensee under this section shall exceed, individually or in the aggregate, 2.5 MHz.

> Note: For illustrative purposes, assume one operating 2 GHz MSS system using 6 MHz and one entering 2 GHz MSS system. The formula in (a) above would give the newly entering MSS system 1/3 of the available spectrum, or 2 MHz. If, on the other hand, there were two operating systems and one newly entering system, the formula would result in the original MSS system retaining 3 MHz, the second system retaining 1.5 MHz and the third system acquiring 1.5 MHz of cleared spectrum. At this juncture, all 2 GHz MSS systems would undertake to clear additional spectrum. It must also be remembered that this is an *interim relief* provision only; it does not set final spectrum coordination boundaries or usage.

§25.yyy Coordination Dispute Resolution

(a) Upon the filing with the Commission of a sworn declaration by a newly entering 2 GHz MSS licensee that it has not been able to reach a coordination agreement with an operating 2 GHz MSS licensee after having negotiated for such agreement in good faith pursuant to Rule 25.xxx, the following procedures shall be implemented:

(1) Within 10 days of the service of such declaration upon the operating 2 GHz MSS licensee, the newly entering 2 GHz MSS licensee shall file with the FCC a Petition for Coordination Determination which shall include: (i) a recitation of the facts pertaining to the subject coordination; (ii) a demonstration that the operating 2 GHz MSS licensee with which it has sought coordination has not negotiated in good faith; (iii) a demonstration that its coordination request is reasonable, appropriate and technically feasible; and (iv) a specific enumeration of the relief requested.

(2) Within 20 days of the filing of a Petition for Coordination Determination, the operating 2 GHz MSS licensee against which it is directed may file a Reply, setting forth such facts and arguments as it deems relevant and pertinent to the issues.

(3) Within 10 days of the filing of such Reply, the Petitioner may file a Response.

(4) No further pleadings will be permitted except as may be requested by the Commission.

(5) All pleadings filed pursuant to this section shall be supported by affidavit or declaration of a person or persons with specific knowledge of the facts alleged consistent with Rule § 1.16 and shall be served on all other parties by hand delivery or overnight courier.

(b) The Commission, by delegated authority, will issue a ruling concerning the Petition for Coordination Determination within 45 days following the filing of the Petitioner's Response.

(c) If a petition for review of such ruling is timely filed, the Commission shall issue a decision with respect thereto within 60 days of its submission but, unless a stay of the ruling issued by delegated authority is granted, the ruling by delegated authority shall remain effective unless and until it is reversed or modified following any such review.

§ 25.zzz Cost Equalization

(a) Except as provided in (d) below, newly entering 2 GHz MSS licensees shall be required to participate in the Commission's 2 GHz MSS relocation cost equalization program when they satisfy the specified relocation/coordination milestone [one-year prior to launch of first satellite].

(b) All 2 GHz MSS licensees are obligated to assume a share of the costs of relocation of incumbent licensees in the 1990-2025 MHz and 2165-2200 MHz bands based on the ongoing average cost per MHz of spectrum. This average cost shall be determined on a rolling, going-forward basis (separately for the uplink and downlink bands), based on the costs incurred by all participating 2 GHz MSS licensees in relocating incumbent licensees in the aforementioned frequency bands as documented in accordance with subparagraph (c). Each participating 2 GHz MSS licensee shall reimburse other 2 GHz MSS licensees, or receive from them as the case may be, a "true up" in an amount representing the proportional use of spectrum by each respective MSS licensee based upon the then average cost per MHz of cleared spectrum.

(c) Each 2 GHz MSS licensee that incurs relocation costs shall routinely file all relevant information with the Commission, on a confidential basis, within 30 days after entering into a voluntary relocation agreement or making expenditures in furtherance of any voluntary or involuntary relocation; provided, however, that such information shall be made available to newly entering 2GHz MSS licensees meeting the coordination milestone as necessary to implement cost equalization as provided herein,

(d) If any 2GHz MSS licensee can demonstrate to the Commission, following an opportunity for comment by other 2GHz MSS licensees, that it is able to share co-frequency with incumbent terrestrial licensees and therefore does not require their relocation in order to operate, and if the Commission issues a determination to this effect, such newly entering 2GHz MSS licensee shall be exempt from the provisions of this Rule; except that such newly entering 2GHz MSS licensee shall be subject to cost equalization to the extent it utilizes spectrum previously cleared by other 2GHz MSS licensees.

[redacted]

B

ATTACHMENT B

ATTACHMENT B
IUSG REPLY COMMENTS - IB DOCKET No. 99-81

PRACTICAL APPLICATION OF THE IUSG LICENSING/RELOCATION PLAN WITH DEFAULT PROTECTIONS

In the following pages, the IUSG explains how the IUSG Negotiated Entry Approach ("INEA") coincides with the 2 GHz MSS relocation process to provide a workable mechanism by which 2 GHz MSS can commence operations in the near term without wholesale, premature, costly and disruptive relocation of incumbent BAS and FS licensees. The IUSG also explains how these proposals will adequately reimburse 2 GHz incumbents without unnecessarily prejudicing future 2 GHz MSS entrants. This draft is a reformulated version of a similar paper appended to the IUSG Reply Comments in ET Docket No. 95-18 (see Appendix A) but reflects refinements to the initial IUSG proposals described therein.

I. THE IUSG LICENSE PLAN IS PREMISED ON SEVERAL FUNDAMENTAL PRINCIPLES THAT SERVE THE PUBLIC INTEREST.

In order for the 2 GHz licensing and relocation process to work in practice, the Commission must establish a licensing scheme that recognizes certain fundamental principles:

- it must permit expeditious entry into the MSS marketplace by new entrant 2 GHz operators in a manner that accommodates, rather than delays, the early commencement of service to the public;
- it must promote efficient use of the spectrum by authorizing only those applicants that demonstrate that they are commercially and technically viable;
- it must ensure access to the allocated 2 GHz spectrum by later entering MSS operators; and

- it should allow maximum flexibility in spectrum assignments to individual MSS licensees.

Each of these licensing principles would serve the public interest by engendering new 2 GHz MSS operations that will provide the public with additional competitive telecommunications services while making optimal use of the valuable spectrum resource. And none are new to the Commission's licensing processes.

As the Commission is well aware, satellite operators often need to change the basic parameters of their satellite systems numerous times between the time they file their initial applications and the time they inaugurate service.[1] Indeed, many applicants file alternative technical plans because of the uncertainties of the market and the constantly changing state of technology.[2] These same uncertainties, which include uncertainty as to the availability of capital, make it impossible for the Commission to predict with any degree of confidence at the time it makes licensing decisions which satellite applicants will ever provide commercial service. Indeed, it should not be the Commission's task to make such predictions; the "market" will determine which applicants succeed and which do not. The Commission's task is to facilitate the availability

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1 By way of example, the initial Teledesic Ka-band system application proposed a constellation of 840 satellites in 21 orbital planes, but the system was recently modified to include only 288 satellites in twelve orbital planes. See Order & Authorization, File No. 195-SAT-ML-97, released January 29, 1999 (DA 99-267).

2 See, for example, the 2 GHz applications of Globalstar (FCC File Nos. 182-SAT-P/LA-97(64) and 183 through 186-SAT-P/LA-97) (proposing CDMA, TDMA and FDMA), Iridium (FCC File No. 187-SAT-P/LA-97(96)) (proposing CDMA and TDMA) and TMI (FCC File No. 189-SAT-LOI-97) (proposing CDMA and FDMA) as proposed systems that do not appear to be final plans.

of new service, not mandate who will provide it. Accordingly, it would be unwise — as well as wholly impractical — for the Commission, at this early stage, to determine which applicant gets how much spectrum and which particular spectrum an applicant is to use. The far better approach — and, in fact, the only one which will ultimately serve the public interest in new, low-cost service — is to provide for maximum spectrum availability to all MSS licensees while ensuring that each eligible and qualified licensee is permitted access to spectrum when it needs it.

Implementing the licensing principles outlined above need not be complicated and will, in fact, reduce the Commission's involvement in band planning and relieve it of the undoubtedly unwanted task of determining which systems are real and which are not, which should get spectrum (and which spectrum they should get) and which should not. Moreover, the INEA ***is the only licensing proposal which is specifically intended to take into account the 2 GHz relocation process*** -- a process which could easily derail other licensing schemes that are premised on *a priori* spectrum assignments to system applicants that are years from providing service or are far from having the financial capability to clear the 2 GHz band.[3]

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[3] Many BAS and FS licensees have demanded that the 2 GHz band be cleared in advance of the provision of any new 2 GHz MSS service. MSTV/NAB, for example, calls for a near-term nationwide cut over, requests that all MSS applicants post a performance bond to cover all future relocation costs, and urges that all MSS applicants be forced to the negotiation table now. MSTV/NAB Comments, ET Docket 95-18, at 12, 15-17 & n. 24. The APTS and SBE insist that MSS pay for relocation "in advance." APTS Comments, ET Docket 95-18, at 7; SBE Comments, ET Docket 95-18, at 3, 4. Iridium, on the other hand, urges in its comments in this proceeding that all BAS and FS incumbents depart the 2 GHz band by a date certain, and asks that the deadline for that departure be set no later than three years from the date on which the Commission grants 2 GHz

(continued...)

Importantly, the INEA does not require the Commission to pick and choose which applicants get particular spectrum assignments. Under the plan, the Commission need not select the amount of spectrum for a particular licensee or the precise location of that spectrum in the band. Were the Commission to make such selections, it might, by blind luck, create an efficient allocation of spectrum and other resources, but would in greatest probability produce instead an inefficient allocation that would result in great inconvenience and cost to BAS and FS incumbents and new MSS entrants, not to mention the public. By instead allowing each MSS licensee, as it nears the provision of service, to select which spectrum it wishes to coordinate, and to decide for itself what spectrum it needs to clear and how to clear it, the Commission will provide the greatest possible economic utility to incumbents and MSS licensees alike. No other licensing plan yields this result.

The essential elements of the INEA are as follows:

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[3](...continued)

licenses to MSS operators. Iridium Comments, ET Docket 95-18, at 2, 3. Notwithstanding these somewhat conflicting suggestions, and wholly apart from the question of whether sharing between MSS licensees and 2 GHz incumbent operations is likely, they would, in practical effect, require all MSS licensees to set aside what could be millions of dollars in relocation funds years before most are prepared to offer service and perhaps years before many MSS licensees have the necessary financing even to begin construction of their respective systems. It is highly improbable that the Commission will be able to get the operators of currently unfinanced systems, whose plans call for initiation of service five or six years from now, to negotiate and pay in the next 18-36 months for relocations they do not presently need or, because of a failure to construct, may never require.

- Using existing Big LEO rules as a starting point, the Commission would establish basic eligibility standards by which to determine whether to conditionally license particular applicants.
- All 2 GHz MSS systems should be conditionally licensed across relevant portions of the entire 1990-2025 and 2165-2200 GHz bands.
- All 2 GHz MSS systems should be required to have sufficient frequency agility to operate in a sufficiently large segment of the band to permit changes in spectrum assignments over time.
- The Commission should provide for domestic intersystem coordination among MSS licensees to determine authorized operational frequency segments for each eligible, licensed system.
    - Early entrants' licenses should be conditioned to avoid claims of priority in domestic coordination with subsequently entering systems (in other words, this would not be an ITU type "Coordination").
    - Eligibility to participate in intersystem coordination (and terrestrial relocation) would be granted upon the achievement of a measurable developmental milestone by the newly entering system that is far enough along in the construction process to assure the establishment of a meaningful system, but early enough in the system's operational plan to allow adequate time for such intersystem coordination, relocation (if necessary) and system implementation.

- 2 GHz MSS conditional licensees that satisfy the foregoing developmental and intersystem coordination milestones should be granted permanent licenses and be assured of receiving a minimum amount of spectrum as a result of the coordination process, as well as access to already cleared spectrum if necessary for later entering systems to initiate service promptly.
- Finally, in order to ensure that no 2 GHz licensee is unfairly disadvantaged in the relocation process, cost averaging should be used and the FCC should be available to resolve disputes.

The IUSG believes that the foregoing six elemental steps are all that is necessary for the Commission's 2 GHz licensing process to meet the basic public interest driven principles set forth at the beginning of this Attachment.[4]

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[4] The IUSG respectfully submits that, in contrast, the "traditional" and "flexible" band plans are deficient in a number of key respects: (i) they are inefficient and wasteful, in that they either under- or over-assign spectrum; (ii) they will be incapable of reflecting the final configuration of any MSS system; (iii) they will cause premature dislocation and/or relocation of incumbents; (iv) they will require premature and, in many cases, unnecessary, relocation expenditures by MSS licensees; (v) they will force MSS systems into premature intersystem coordination, which will likely require the operators of as-yet-unbuilt satellite systems to design those systems to conform to an FCC band plan, rather than to market demand; (vi) they will require band plan and system modifications as licensees modify their designs; and (vii) they fail to link licensing and coordination to due diligence milestones.

II. THE RELOCATION PROCESS RECOMMENDED BY THE IUSG WILL FACILITATE THE INAUGURATION OF SERVICE BY NEW 2 GHz MSS SYSTEMS AND MINIMIZE DISRUPTION TO INCUMBENTS AND COSTS TO ALL.

Just as in the case of the licensing of new 2 GHz satellite systems, the regulatory process by which the Commission will implement its ET/Microwave relocation policies (as appropriately modified for 2 GHz MSS) must also meet certain essential public interest objectives. These can be fairly summarized as follows: (1) facilitating the early introduction of new MSS by avoiding policies which needlessly encumber the relocation negotiation process[5]; (2) minimizing disruption to incumbent BAS/FS licensees by adopting policies which allow for a gradual transition to other equipment and other frequencies[6]; and (3) compensating incumbents that are subject to harmful interference from new MSS systems for required equipment modifications or replacements while, at the same time, minimizing costs to the relocator.[7]

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[5] 2 GHz MSS relocation policies that require or allow MSS systems that are years from commencing service to participate in the relocation negotiations of MSS systems that satisfy the developmental milestones described in Section I of this Attachment only serve to provide such later entrants with the ability and incentive to delay the early entrants (either because they are not prepared to pay relocation at this time or otherwise would like to inhibit a competitive service until they themselves are ready).

[6] As shown in Section II of the IUSG Reply Comments in ET Docket 95-18, the majority of comments filed by incumbent licensees in that proceeding reveal two overriding concerns: (1) incumbents need to receive compensation prior to being required to relocate; and (2) because a simultaneous, nationwide relocation would be a difficult, costly and time-consuming process, it is to be avoided if possible and adequate time for transition must be provided.

[7] As also discussed in Section II of the IUSG Reply Comments in ET Docket 95-18, many of the MSS commenters pointed out that the imposition of the full costs of a (continued...)

The incumbent relocation component of the INEA meets all of these public interest objectives, as demonstrated in the following scenarios. In considering the examples below, however, it is important to remember that they do not reflect the "market-by-market" relocation in the uplink band which several commenters found unworkable. Rather, they are premised on a nationwide "channel-by-channel" relocation that the IUSG believes has none of the pitfalls ascribed by commenters to a market-by-market changeover, and none of the problems that would be created by the nationwide simultaneous changeover plan that almost all MSS commenters and many incumbents likewise condemned.[8] Following are three examples that serve to illustrate how the transitional relocation component of the INEA would work in practical application.

A. Two NGSO Systems - Channel Assignment Relocation (TDMA/TDMA)

In the first example, there are two NGSO MSS systems — A & B. Both propose TDMA access technology. System A will be operational in the third quarter of the year 2000; System B will be operational in the fourth quarter of 2003. Pursuant to the INEA, the FCC staff has determined that both Systems A & B meet the basic eligibility requirements adopted in the 2 GHz MSS services rulemaking Report & Order (which is anticipated to be concluded by the end of 1999) and are, by the first quarter of 2000, conditionally licensed to operate across relevant

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[7](...continued)
nationwide, simultaneous conversion of BAS incumbents on MSS operators would likely make near-term entry into the U.S. market impossible.

[8] Constellation, Boeing and Cosmos, for example, insist (as does the IUSG) that only a phased transition is feasible. Constellation Comments, ET Docket 95-18 at 4; Cosmos Group Comments, ET Docket 95-18, at 7-8, 9; Boeing Comments, ET Docket 95-18, at 5.

portions of the entire uplink and downlink bands. Both licenses are conditioned on a requirement that the licensees in good faith coordinate spectrum access with each other and with later entering MSS systems.

Because both systems are start-up enterprises, spectrum requirements in the early years of system operation (for example, years 1-3) will be minimal (for this purpose, we assume 2 to 6 MHz). Because System B will not be operational until the end of 2003, however, it does not yet want to negotiate with, and pay for relocation of, incumbents for several reasons: (1) it does not have the funds to do so, or the funds it does have are needed for system development; (2) it has no need for spectrum for four years; and (3) if it waits to enter into relocation negotiations until it is closer to service provision, it may encounter a less costly relocation obligation because some incumbents may have decided for their own competitive reasons to "relocate" on their own. (In the case of BAS, for example, some incumbents may choose to acquire on their own digital equipment capable of operating in the new 85 MHz BAS band plan, a process which has already begun.)

System A, on the other hand, has only 12 months or so from the present until commencement of commercial service (and would have only six to nine months from the issuance of its conditional license before commercial service would begin); thus, it must start clearing its initially needed spectrum immediately. System A therefore proceeds to clear spectrum in the uplink and downlink bands on its own.[9]

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[9] The IUSG would be seriously concerned if the FCC mandated that System A must (continued...)

Knowing that BAS incumbents do not utilize all seven BAS channels in all markets and that analog operation can be conducted in a reduced channel size of 12 MHz,[10] System A determines that its least costly relocation alternative is to reduce BAS Channel 1 to 12 MHz, leaving all other BAS channels (2-7) as currently configured. This decision requires the "displacement" of only a limited number of broadcasters; i.e., only those BAS licensees that are assigned by their local frequency coordinator to operate on Channel 1 on a primary basis. As only those broadcasters in the largest markets have a need for all seven BAS channels,[11] System A is only required to transition an estimated 50-75 television station licensees who have traditionally been assigned operations in Channel 1 (as opposed to the enormous effort and cost that would be required to relocate all 1500 television licensees nationwide from all channels simultaneously).

In order to operate in the cleared portion of BAS Channel 1 (e.g., 2002-2008 MHz),[12] therefore, System A negotiates only with those broadcasters assigned to this channel. At most,

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[9](...continued)
negotiate with incumbents *jointly* with System B despite System B's clear economic incentive not to enter into negotiations as yet. System B would have every reason to delay, and none to expedite, the relocation process. Under the INEA, however, System B would acquire no "right" to negotiate for spectrum with System A until System B achieves the developmental and intersystem coordination milestones discussed above. If the Commission should not adopt this aspect of the INEA, then it must allow each system to negotiate relocation as each system chooses. Economic reality will determine if System A negotiates relocation individually or jointly with System B.

[10] See, for example, SBE Comments, ET Docket 95-18, at 2.

[11] Id.

[12] These frequencies are intended merely to be illustrative; a similar approach could be employed in other frequencies.

System A would be obligated to ensure either that the affected BAS licensees' equipment can be suitably modified to operate in the narrower Channel 1 or, if such is not feasible, to pay for the acquisition of equipment capable of doing so. In all cases, as long as the relocated BAS licensee is provided with comparable facilities[13] on a timely basis, it is System A's choice as to whether to modify or replace the incumbent's existing equipment. To the BAS licensee, it should make no difference which option System A chooses. The result is the timely provision of comparable facilities to the displaced BAS licensees, but greatly reduced disruption to other incumbents and a minimization of the relocation expense incurred by System A.

System A has thus cleared a portion of BAS Channel 1 on a nationwide basis and begins operation in the cleared subband,[14] having arranged to relocate only a limited number of BAS incumbents (and similarly arranging to relocate only those FS incumbents subject to interference in a limited 6 MHz portion of the downlink band[15]).

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[13] The term "comparable facilities" as used in this context is defined by Charles River Associates in its paper recently submitted to the FCC— i.e., it is the economic value of facilities in place represented by its remaining useful life. *See* ICO *Ex Parte*, ET Docket No. 95-18 (filed June 18, 1999) (including an analysis by Charles River Associates dated June 18, 1999 and entitled "An Economic Analysis of Regulatory Takings and Just Compensation with an Application to Mobile Satellite Services").

[14] Because, in many markets, not all seven BAS channels are utilized, clearing a portion of Channel 1 in those areas simply entails requiring frequency coordinators to direct incumbent licensees to operate only in BAS channels 2-7.

[15] As the API notes, FS incumbents are not likely to experience harmful interference from MSS systems until there is significant loading of their facilities (API Comments, ET Docket 95-18, at 10).

Between the latter part of the year 2000 and through the third quarter of 2003, System A provides service without conflict with other MSS systems. In late-2003, however, System B plans to commence operations. One year prior to the launch of System B's first satellite (for illustrative purposes, we assume year end 2001), in accordance with the INEA, System B meets both its developmental and coordination milestones and exercises the right to obtain a defined block of spectrum in the band, coordinate with System A for access if necessary, and assume its relocation obligations, if any.

Under the INEA, System B has several choices with regard to relocation. It can either: (1) negotiate to share the 2002-2008 MHz subband (and any cleared downlink spectrum) already cleared by System A; (2) seek to clear additional spectrum jointly with System A; (3) some combination of the two; or (4) elect to undertake to clear other 2 GHz spectrum on its own. Presumably, System B will make this choice premised on its system design, anticipated loading in the early years of operation, and the estimated internal costs of relocating new spectrum versus sharing with System A.[16] A rational and economically efficient outcome, however, can only be achieved if these decisions are made by System B at the time it confronts the question. They certainly cannot be made by the Commission pursuant to some arbitrary band plan three to four years in advance.

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[16] Under the IUSG cost averaging rule (see draft Rule 25.zzz), however, whatever System B's choice, its attributable relocation expense on a cost/MHz basis — relative to System A — will be the same.

System B determines that its most economically efficient option is to use a small amount of the subband cleared by System A and, at the same time, proceed to clear another 2 MHz of spectrum for future growth. System B then notifies System A that it desires to commence intersystem coordination (which System A's license requires it to do in good faith) and that its commercial plan requires 2 MHz of the spectrum already cleared by System A (presumably in both the uplink and downlink bands). Since both systems employ TDMA technology, they cannot operate co-frequency. As a result of the intersystem coordination, however, they agree that System A will retain 4 MHz of the cleared subband and System B will operate in 2 MHz (e.g., from 2006-2008 MHz).

At this point, if System A does not require more than 4 MHz to serve its current customers and those expected to be garnered in the near term, it may decide to wait before clearing additional spectrum for growth. On the other hand, if System A determines that it requires a total of 6 MHz for continued operation and growth (or, perhaps more), it can proceed to clear whatever additional spectrum it needs either at its own expense or in conjunction with System B (if the latter determines that it is willing to expend funds in the very early years of its operation for relocating incumbent spectrum that it will not need for another two to three years). In any case, each System will determine the least costly spectrum-clearing alternative given its own particular system design and commercial plan but, relative to each other — under the INEA cost equalization rule (25.zzz) — both systems will pay the same total amount per MHz of spectrum that each utilizes.

If either System A, System B, or both, require additional spectrum in which to operate, BAS Channel 2 would be the next channel to be partly cleared. Thereafter, BAS licensees would still have five 17 MHz analog channels in which to operate without the need for equipment modification or frequency relocation, and two narrower 12 MHz channels (1990-2002 MHz and 2013-2025 MHz).[17] System A and System B would thus be able to operate in a total of 11 MHz (2002-2013 MHz), jointly sharing the costs of the relocation of the entire subband based on how much spectrum each agrees to utilize following further intersystem coordination.[18]

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[17] See IUSG Comments, ET Docket 95-18, at Exhibit 1. As before, the cost of clearing a small additional amount of spectrum (in this case, 5 MHz) would only require the modification or replacement of equipment (e.g., either the addition of video filters for analog operation or the acquisition of additional facilities) for a limited number of BAS licensees — i.e., those that have been assigned by the local frequency coordinator to operate in BAS Channel 2 on a primary basis. All other BAS licensees, particularly those not located in the top markets, could continue to operate unfettered in analog BAS Channels 3-7 (which the SBE apparently has found to be adequate for most current needs; see SBE Comments, ET Docket 95-18, at 2).

[18] In the event a coordination agreement cannot be reached and/or additional spectrum cannot be cleared in time for System B to commence service, System B would gain automatic interim access to a portion of the spectrum cleared by System A pursuant to proposed draft Rule 25.xxx (see Attachment A).

B. A CDMA GSO System Enters - Channel Assignment Relocation[19]

By the fourth quarter of 2003, two NGSO TDMA systems may be operating in some or all of the 11 MHz constituting the cleared portions of BAS Channels 1 and 2 (and a similar amount of spectrum in the downlink band). BAS licensees which traditionally were assigned by their respective frequency coordinators to operate on these channels either may have had their analog equipment modified to accommodate the narrower channels or may have purchased digital equipment that will accomplish the same result. In either case, only those BAS and FS licensees that were required to be relocated in order to permit 2 GHz MSS operations have in fact been relocated. At this time, a third system — C (a GSO using CDMA technology) — also found eligible by the Commission in the first quarter of 2000 to be granted a conditional license — announces that it has met its developmental and coordination milestones (i.e., it has, in addition to satisfying various construction milestones set forth in the 2 GHz MSS rules, entered into a definitive launch contract and is within one year of the launch of its first satellite. Thus, the existing two systems — A and B — may have to make room for System C by the end of 2004. (Because System C is a single satellite GSO, it will commence commercial operations shortly after first launch, i.e., early in 2005.)[20]

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[19] As it is clear that the first entrant into the 2 GHz MSS market will be ICO — which proposes TDMA technology — no purpose is served by hypothesizing a scenario in which the first entrant is a CDMA system.

[20] Also, because System C operates CDMA, it cannot operate co-frequency with either Systems A or B and must have its own spectrum assignment.

By this time, however, ten years will have elapsed since the initiation of the 2 GHz relocation rule making[21] pursuant to which both incumbent BAS and FS licensees were placed on notice of the Commission's spectrum reallocation plans and the need to retune, modify or replace their existing equipment at some future date. If the sunset date recommended by the IUSG and others is adopted, all remaining spectrum in the 1990-2025 MHz and 2165-2200 MHz bands will now become available for MSS use without any additional obligation on the part of MSS operators to fund incumbent relocation. In such a case, assuming Systems A and B are occupying the entirety of the cleared portions of the 2002-2013 MHz subband, System C's obvious choice is simply to notify those remaining incumbent BAS or FS licensees no later than July 2004 (so as to provide them with the six months' notice required by the Commission's ET/Microwave Relocation rules) that they must vacate some or all of the remaining portions of the band (i.e., 1990-2002 MHz and/or 2013-2025 MHz in the case of BAS) so that System C can commence operations. As System C will not, at any stage of its operation, require 24 MHz of spectrum in each direction — and, in addition, as it is a regional GSO — it is unlikely to give notice that all remaining incumbents must clear the band. Thus, under this scenario, Systems A and B will each continue to share the 11 MHz of previously cleared spectrum and, for illustrative purposes, we will assume that System C gives notice to BAS incumbents that the rest of Channel 2 (which coincides with the Region 2 allocation) must be cleared. In so doing, System C will make

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[21] See Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile-Satellite Service, Notice of Proposed Rule Making, 10 FCC Rcd 3230 (released January 31, 1995).

available an additional 10 MHz of spectrum for its own operations and growth as well as for the growth of Systems A and B.[22]

If we assume, on the other hand, that the sunset date adopted by the Commission is not until 2006 or 2007, System C then faces the same choices faced earlier by System B: it can enter coordination with either or both Systems A or B to share a portion of the already cleared 2002-2013 MHz subband or it can clear the small amount of spectrum that it may need for start-up operations on its own. System C will make this choice — as did System B — based upon its then-current system design, its commercial plan and its economic analysis of which alternative best serves its own operational needs.

If System C determines, for example, that most BAS licensees have already relocated — because, five years after the issuance of the Report & Order in this proceeding, digital operations for ENG are the norm in the broadcast industry and manufacturers are producing such equipment in record quantities and at much-reduced prices — it may opt to arrange for the relocation of those few remaining BAS licensees that continue to operate with analog equipment in the remaining portions of either BAS Channels 1 or 2.[23] Assuming, however, that the Commission

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22 On the other hand, if Systems A and B are together utilizing only 8 MHz of the cleared 11 MHz subband, System C may decide that, because it only needs 3 MHz to commence commercial service, it would do better to coordinate with Systems A and B. In any case, as a first round licensee, pursuant to the IUSG cost equalization rule (Rule 25.zzz), it will — on a proportional basis — pay the same amount per MHz for relocation as Systems A and B.

23 At this point, Phase 3 of the IUSG/ICO Relocation Plan may be needed. See IUSG Comments, ET Docket 95-18, at 25-26.

prefers that a GSO MSS system with regional commercial plans occupy only that part of the spectrum which is not globally allocated for MSS (i.e., 2010-2025 MHz and 2165-2170 MHz), System C can be expected to opt to clear all of the remaining 10 MHz of BAS Channel 2 at a very much reduced relocation cost. (Although, by that date, this may entail no meaningful relocation obligation at all, since System C is a first round licensee, System C would be subject to the INEA cost equalization rule.)

Alternatively, System C may choose to utilize a small portion of the bands already cleared by Systems A and B until the remaining incumbents have vacated the band entirely. The choice is essentially an economic one that only System C can rationally make; again, the FCC cannot make the choice at a point in time which is four years before System C knows itself that it will actually launch its satellite and five years before System C knows what incumbent relocation obligations it will face. In any case, by 2005 there are two NGSO TDMA systems and one GSO CDMA system operating in the cleared bands, each having minimized its relocation expenditures by a judicious selection among economic alternatives. In addition, hundreds if not thousands of incumbent BAS and FS licensees have remained in the band, continuing to utilize their present facilities undisturbed by forced, premature relocation.

C. One TDMA NGSO, Two CDMA NGSO - Channel Assignment Relocation

Following the commencement of operations of System A in 2000, let us assume that two NGSO CDMA systems — also found eligible by the Commission following the adoption of the Report & Order in the 2 GHz MSS services rules proceeding — meet the applicable developmental and intersystem coordination milestones in 2003.[24] By this date, System A may still be operating in the six MHz that it cleared for its own use (i.e., 2002-2008 MHz), and while some BAS incumbents are operating in a narrower Channel 1 of 12 MHz (i.e., 1990-2002 MHz), most are using their existing analog facilities in the undisturbed BAS Channels 2-7.

As new Systems D and E use CDMA technology, they have agreed between themselves to operate co-frequency and to undertake any relocation jointly (on the assumption that both will experience similar loading of their systems). In 2003 they notify System A that they desire intersystem coordination and that they together require 4 MHz of spectrum to commence operations. Because only six MHz of spectrum has been cleared, System A — if all spectrum were divided equally — would find itself with only 2 MHz of spectrum,[25] an amount it determines to be inadequate to continue serving its existing customers. Assuming Systems D and E insist upon occupying 4 MHz of spectrum immediately and that this spectrum must derive from the

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[24] As no 2 GHz MSS Applicant (other than ICO) has announced that it is proceeding with system construction in the absence of a Commission license, it is reasonable to assume that the earliest date on which the next 2 GHz MSS system can begin commercial operations is 2004 (a period of four years from the currently anticipated issuance of its conditional license by the FCC).

[25] As noted above, Systems D and E would share their portion of the band and thus presumably enter the coordination with System A as a single entity.

subband cleared by System A, the latter — coordinating in good faith — can either relinquish its claim to the 4 MHz and begin to clear spectrum elsewhere, alone or in connection with Systems D and E,[26] and/or request that the Commission resolve the spectrum dispute pursuant to draft Rule 25.yyy. In any case, the resulting decisions will derive from rational, commercial evaluations by the various parties and not from regulatory fiat that has no reasonable chance of yielding an efficient economic outcome. Moreover, under the proposed spectrum default rule (25.xxx), Systems D and E can be assured of some minimal amount of spectrum in which to commence operations should additionally required spectrum not be cleared prior to their planned commencement of service and the resolution of the dispute process under Rule 25.yyy.

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As can be clearly seen from the foregoing hypothetical, but realistic, scenarios, the licensing and relocation components of the INEA, when coupled with the default rules, provide an economically efficient and spectrum-efficient means of achieving the Commission's public interest objectives.

The INEA is also the only proposal presently before the Commission which will do so.

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[26] In such case, of course, Systems D and E would jointly reimburse System A their respective share of the relocation costs pursuant to the proposed cost equalization Rule 25.zzz.